



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/075,004	02/13/2002	Jicbo Luo	84093THC	7143

7590 03/09/2006

Thomas H. Close
Patent Legal Staff
Eastman Kodak Company
343 State Street
Rochester, NY 14650-2201

EXAMINER

TUCKER, WESLEY J

ART UNIT PAPER NUMBER

2623

DATE MAILED: 03/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/075,004	Applicant(s) LUO, JIEBO	
	Examiner Wes Tucker	Art Unit 2623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 February 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>2-13-02</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim 10 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claim 10 recites a computer program product to perform the method of claim 1. It is the Office's position that this is non-statutory. A computer program product must be embodied in a computer readable medium.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 5 and 15 are rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. The claimed the element of a color moment, which is critical or essential to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976). The phrase "color moment" does not appear in anywhere in the specification. It is also unclear what a color moment is with no definition given in the specification and a 112 2nd paragraph rejection is also cited below. Appropriate correction is required.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 5 and 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claimed element of a "color moment" does not appear anywhere in the specification and further it is unclear what a color moment might be as moment is typically used to describe a point in time and it is unclear how color describes a moment or vice versa.

Claims 1-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In particular independent claims 1 and 11 use the word "semantic" to describe an object, which can be detected and from which, some kind of orientation can be gathered. The only definitions of semantic seemed to be directed to language or words.

From dictionary.com – definition of Semantic:

1. Of or relating to meaning, especially meaning in language.
2. Of, relating to, or according to the science of semantics.

In the environment of the present invention, semantic is being used to describe an object as a distinctive object from which orientation can be determined. So when applicant uses text as a semantic object the definition makes some sense, but when applicant uses for example in claim 3, human face, human figure, clear blue sky, lawn

grass, a snow field, body of water, tree, a sign, and written text it is unclear how these objects are "semantic." Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-5, 8-15 and 18 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent 6,798,905 to Sugiura et al.

With regard to claim 1, Sugiura discloses a method for determining the orientation of a digital image, comprising the steps of:

a) employing a semantic object detection method to detect the presence and orientation of a semantic object (column 9, lines 20-25). Sugiura discloses using text as a semantic object. The orientation of the text is calculated and then a "line direction" or orientation is determined.

b) employing a scene layout detection method to detect the orientation of a scene layout (column 9, lines 25-30). The scene layout detection is interpreted as the use of line direction to determine the orientation for using each sub-image.

c) employing an arbitration method to produce an estimate of the image orientation from the orientation of the detected semantic object and the detected orientation of the scene layout (column 9, lines 30-35). Sugiura discloses that each sub-image has an orientation (scene layout) calculated by using text and line direction information (semantic object and orientation). Then each calculated orientation has a reliability measure calculated and the one with the greatest reliability measure is the calculated orientation to be used. So the arbitration uses information from both the semantic object orientation and the scene layout orientation (sub-image orientation).

With regard to claim 2, Sugiura discloses wherein the step of employing a semantic object detection method comprises employing as plurality of semantic object detectors to detect a plurality of semantic objects and their orientations (Fig. 6). Semantic objects are detected in each of the four sub-images in Fig. 6 in different detections.

With regard to claim 3, Sugiura discloses wherein the semantic objects are characters in text (column 9, lines 17-23).

With regard to claim 4, Sugiura discloses therein the scene layout detection method comprises the steps of:

- a) dividing the digital image into non-overlapping blocks (Fig. 6) ;
- b) computing at least one statistic for each image block (column 9, lines 26-30);

c) forming a feature vector by concatenating the statistics computed from the image blocks (column 9, lines 26-30). Sugiura discloses obtaining a reliability measure for each sub-image block. The reliability measure is calculated from the corresponding histograms. The histograms are interpreted as a feature vector.

d) using a trained classifier to produce an estimate of the image orientation (column 9, lines 25-35). The trained classifier producing an estimate are the "estimates" or orientations calculated for each sub-image, based on these "estimates" reliability measures are calculated and the final orientation is decided.

With regard to claim 5, Sugiura discloses that the invention is applied to full-color copiers. It is unclear what a color moment is because there is no support or definition in the present specification, but clearly the invention of Sugiura is in the environment of full-color imaging.

With regard to claim 8, Sugiura discloses wherein the arbitration method employs a decision tree (Fig. 8).

With regard to claim 9, Sugiura discloses the step of rotating the digital image to re-orient the digital image in an upright direction (Fig. 8, elements S115, S116, S117).

With regard to claim 10, Sugiura discloses a computer program product for performing the method (Fig. 2).

With regard to claim 11, Sugiura discloses a system for performing the method steps as discussed in claim 1 (Figs. 2, 4 and 5).

With regard to claims 12-15 and 18, the discussions of claims 2-5 and 8 apply respectively.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,798,905 to Sugiura et al. in view of IEEE document titled "Vanishing Point Detection by Line Clustering" by G.F. McLean and D. Kotturi hereinafter referred to as McLean.

With regard to claim 6, Sugiura discloses the method of claim 1, but does not disclose using vanishing points to determine scene layout. However, the use of vanishing points to determine scene layout information is well known in the art.

McLean discloses a vanishing point detection method comprising the steps of:

- a) extracting straight lines from the digital image (see abstract).
- b) computing a point of convergence (or vanishing point) from a subset of the extracted straight lines (see abstract), and;
- c) producing an estimate of the image orientation according to the vanishing point (see abstract).

McLean "extracts straight line structure from images, develops a measure of line quality for each line, estimates the number of vanishing points and their approximate orientations, and then computes optimal vanishing point estimates through combined clustering and numerical optimization," taken from the abstract. McLean teaches determining different vanishing points using sets of line equations and using the error estimates of the line equations only the most likely vanishing points and their locations are calculated (p.1091, left column steps 1-3). So McLean effectively teaches arbitration among all possible vanishing points to determine estimated vanishing points that are most likely definitive vanishing points. This will effectively describe the scene layout and will describe information about how the image is oriented. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use vanishing points in an image in an arbitration method of determining image orientation in combination with the orientation taught by Sugiura in order to arbitrate the best possible orientation information.

With regard to claim 16, the discussion of claim 6 applies.

Claims 7 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,798,905 to Sugiura et al. in view of U.S. Patent 6,996,549 to Zhang et al.

With regard to claim 7, Sugiura discloses the method of claim 1 but does not explicitly disclose the use of a Bayes Net. Bayes Nets are essentially decision trees with probabilities indicating the likelihood of making certain decisions. Sugiura discloses such a decision tree in Fig. 8 and the decision tree in Fig. 8 uses probabilities in the reliability degrees detected from the histograms. Sugiura does not explicitly state that the decisions are made with a Bayes Net. However Bayes Nets are very well known in the art for making decisions or indicating probabilities according to different likelihoods. For example Zhang teaches that image segmenting, detecting, grouping, and decisions can be made with any number of methods such as Bayesian networks, histogram thresholding, neural networks etc. Therefore it would have been obvious to one of ordinary skill in the art to use a Bayes Net as taught by Zhang in combination with the probability controlled decision tree of Sugiura shown in Fig. 8 in order to provide imaging detecting and decision making solutions.

With regard to claim 17, the discussion of claim 7 applies.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wes Tucker whose telephone number is 571-272-7427. The examiner can normally be reached on 9AM-5PM.

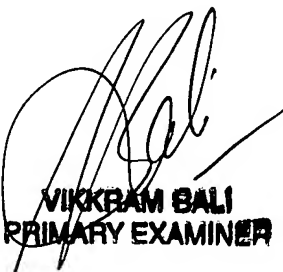
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on 571-272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Wes Tucker



3-3-06



VIKRAM BALI
PRIMARY EXAMINER